REMARKS

In response to the office action mailed March 23, 2007, Applicants amended claims 1, 5, 12, 19, 24-27, 64, 72, and 73. Applicants also cancelled claims 4, 16, and 31 and added new claims 76-78. Claims 13, 28, 33-63 and 71 were previously cancelled. Thus, claims 1-3, 5-12, 14, 15, 17-27, 29, 30, 32, 64-70, and 72-78 are presented for examination.

Claims 1-4, 6, 7, 9-11, 17, 19-22, 25, 26, 32, 64-66, 68, 69, 72, and 73 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pub. 2001/0047166 ("Wuchinich") in view of U.S. Pub. 2003/0045887 ("Sakurai") and in further view of U.S. Patent No. 5,269,297 ("Weng"). But Wuchinich, Sakurai, and Weng, taken alone and in combination, fail to disclose or suggest each and every limitation of Applicants' claims.

The Examiner noted that Wuchinich fails to disclose "operating at the resonant frequency of the transducer," but contended that it would have been obvious to a person or ordinary skill in the art, in view of Sakurai, to modify Wuchinich's device to include this feature, which, according to the Examiner, is disclosed by Sakurai. Office action mailed March 23, 2007, p. 3. The Examiner also acknowledged that Wuchinich and Sakurai fail to disclose or suggest an ultrasonic probe configured to produce a cavitation, but contended that a person of ordinary skill in the art, in view of Weng, would have been motivated to modify the device resulting from the combination of Wuchinich and Sakurai to include "means for the ultrasonic probe to produce cavitation along the longidtudinal axis in a medium surrounding the probe during use in order to destroy a thrombus in the patient's blood vessel." Id., pp. 3-4. It appears that the Examiner relied on Sakurai only for its disclosure of a probe that operates at the resonant frequency of a transducer, but that limitation is only present in Applicants' dependent claims 72 and 73. Nevertheless, Applicants address the proposed combination of Wuchinich, Sakurai, and Weng with regard to claims 1-4, 6, 7, 9-11, 17, 19-22, 25, 26, 32, 64-66, 68, 69, 72, and 73 below. In the event that the Examiner intended to reject all of the above-noted claims except for claims 72 and 73 in view of the combined teachings of only Wuchinich and Weng (and not Sakurai), Applicants note that the arguments provided below are equally applicable to such a rejection.

Even if the device resulting from the combined teachings of Wuchinich and Sakurai was modified to include Weng's distal tip, as suggested by the Examiner, the resulting device would not include a probe that is configured such that cavitation is produced, in a medium surrounding the probe, along a portion of the probe having a radially asymmetric cross section when the portion of the probe having the radially asymmetric cross section torsionally vibrates during use, as required by Applicants' claims. The tip of Weng's device is designed to produce cavitation when the tip is vibrated longitudinally. See, e.g., Weng, col. 6, lines 10-14; col. 10, lines 34-54; col. 14, lines 8-23. There is no indication that Weng's tip includes a radially asymmetric portion that is capable of producing cavitation when torsionally vibrated during use.

Nor is there any indication that the resonator of Wuchinich or the vibration transmitting member of Sakurai include radially asymmetric portions that are configured to produce cavitation when torsionally vibrated during use. Wuchinich describes an ultrasonic tissue dissection system that produces both longitudinal and torsional motion at a tissue contacting tip of a resonator for the purpose of tissue dissection. See, e.g., Wuchinich, paragraph 0062. Wuchinich's resonator includes a portion having an inhomogenous cross section that can help to transform longitudinal motion into longitudinal and torsional motion. See, e.g., id., paragraph 0070. There is no indication, however, that the inhomogenous portion of Wuchinich's resonator, or any other portion of Wuchinich's resonator, is configured to produce cavitation when torsionally vibrated during use. Sakurai similarly describes an ultrasonic calculus treatment apparatus that transmits longitudinal and/or torsional vibration to a distal tip of a vibration transmitting member for contact with a calculus. See, e.g., Sakurai, Abstract; paragraphs 0042-0051. Sakurai notes that the calculus is shattered or broken apart when the vibrating tip comes into contact with the calculus. See, e.g., id., paragraph 0046. Sakurai's vibration transmitting member is not described as having a portion with a radially asymmetric cross section. Nor is there any indication that any portion of Sakurai's vibration transmitting member is configured to produce cavitation when torsionally vibrated during use.

In view of the foregoing discussion, Applicants request reconsideration and withdrawal of the rejection 1-4, 6, 7, 9-11, 17, 19-22, 25, 26, 32, 64, 65, 66, 68 and 69.

Claims 5 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wuchinich in view of Sakurai, in further view of Weng, and in further view of U.S. Pub. 2002/0029054 ("Rabiner"). However, Rabiner does not cure the deficiencies of Wuchinich, Sakurai, and Weng that were discussed above. Therefore, Applicants submit that Applicants' claims are patentable over Wuchinich, Sakurai, Weng, and Rabiner, whether taken alone or in any proper combination.

Claims 8, 12, 14-16, 24, 27, 29-31, 67 and 70 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wuchinich in view of Sakurai in further view of Weng and further in view of U.S. Pub. 2003/0212331 ("Fenton"). However, Fenton fails to cure the deficiencies of Wuchinich, Sakurai, and Weng that were discussed above. Therefore, Applicants request that this rejection be reconsidered and withdrawn.

Claim 18 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Wuchinich in view of Sakurai in further view of Weng and further in view of U.S. Pat. 6,433,464 ("Jones"). However, Jones fails to cure the deficiencies of Wuchinich, Sakurai, and Weng that were discussed above. Applicants, therefore, request reconsideration and withdrawal of this rejection.

Claims 74 and 75 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wuchinich in view of Sakurai in further view of Weng and further in view of U.S. Pat. 5,935,142 ("Hood"). However, Hood fails to cure the deficiencies of Wuchinich, Sakurai, and Weng that were discussed above. Applicants, therefore, request reconsideration and withdrawal of this rejection.

As noted above, Applicants also added new claims 76-78, which feature a probe where substantially an entire length of the probe has a radially asymmetric cross section. Neither Wuchinich, Sakurai, Weng, Rabiner, Fenton, Jones, or Hood discloses or suggests such an arrangement. For this reason and for the reasons discussed above with regard to independent claims 1, 19, and 64, Applicants submit that these claims are allowable over the references cited by the Examiner.

No fees are believed to be due at this time. Please apply any charges or credits to deposit account 06-1050, referencing Attorney Docket No. 18554-035001.

Respectfully submitted,

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